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ABSTRACT

This booklet presents a research plan of the Department of Health, Education, and Welfare (DHEW) aimed at understanding aging in the United States. The following subjects are discussed: (1) demographic information that outlines major issues affecting aging; (2) priorities for aging research in the biomedical, behavioral and social science and human services areas; (3) required resources to address these priorities including research manpower, human and animal experimental populations, and access to validated data; (4) a brief legislative history of research on aging within DHEW; and (5) brief, general recommendations on future budget needs and means to coordinate a program among various DHEW units. (Author/JLL)

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SELVES
AND WELFARE
National Institutes of Health

OUR FUTURE SELVES

A RESEARCH PLAN

TOWARD UNDERSTANDING AGING

of the

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Prepared by the

National Institute on Aging

With the Advice of the

National Advisory Council on Aging

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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PREFACE

Our social, economic, health, research, and other vital institutions and arrangements were not prepared for the "demographic revolution"--the dramatically rising numbers of people, and especially older people, that came with the twentieth century. Thus, the human triumph marked by increasing life expectancy contained potential and actual tragedies for all too many older people and their families. And, unless these same institutions and arrangements are not perfected in the next decades, the possibilities for personal tragedies--and social disturbances--will expand as the absolute numbers and relative proportions of the population over 65 attain new heights at approximately 2020 A.D.

However, what if our nation--and collectively other nations--take the demographic achievement still further and extend the vigor and productivity of older people? What if the nature and the duration of the dependency and frailty of old age are altered and decreased through fundamental biomedical and behavioral research? Then we will be confronted, not with older people as we presently know them and old age as we presently know it, but an entirely new situation, some evidences of which we are beginning to see in the active and activistic, lively and resourceful older people of today. From that angle, research is concerned with what old age <u>will become</u> as we eliminate disease, disability, and social adversity. Of course, research alone cannot accomplish the objective of a healthier and stronger older population, but without the fruits of research it is not likely that our social and economic institutions and arrangements can go far beyond palliation.

The quality, not alone the quantity, of life should be the quintessential goal of research as well as other human efforts--lest our future selves will be in jeopardy.

Through the accumulated knowledge and the generosity in time and effort of the National Advisory Council of the National Institute on Aging, the National Institute on Aging staff, and the broad community of gerontologists, we have the beginning formulations of a significant new research effort in America: the accompanying Research Plan. It is a reasonable and reasoned promise of a major endeavor to comprehend the nature of aging and its associated ills with the ultimate aspiration of a more decent and dignified old age.

Robert N. Butler, M.D.
Director
National Institute on Aging

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Chapter 1

INTRODUCTION

> "The Secretary . . . shall . . . develop a plan for a research program on aging designed to coordinate and promote research into the biological, medical, psychological, social, educational, and economic aspects of aging." 1/

This Nation's elderly hold up a distorted mirror to our society. The distortion is imposed by two elements: the vital supports which many of the elderly lose merely by the fact of having become aged; and our ignorance of what aging is--an ignorance made the more profound by our societal resistance to acknowledging the fact of aging and preparing adequately for it.

UNFULFILLED EXPECTATIONS

The normal supports available to much of our population but frequently unavailable to the aged include:

- o jobs and basic economic security
- o quality health care (physical and mental)
- o transportation
- o a full range of legal and other professional services
- o decent housing arrangements
- o protection from crime

Such supports are by and large not available to the aged. Despite inadequate income and savings, many have no job or at best only part-time work, and no ready surrogate for the loss of self-worth and esteem that accompanies an end to employment. The aged learn that the medical system that fits their needs in middle age is now out of phase, not structured--in manpower, institutional resources, payment

1/ The Research on Aging Act of 1974, P.L. 93-296

mechanisms, or motivation--to deal with the chronic impairments and long-term illnesses that may now afflict them.

There is not sufficient psychiatric help or understanding to aid in coping with the wrenching changes and strains of old age--bereavement, loneliness, financial and social insecurities. Many aged persons find their financial resources meager and dwindling: most elderly couples and individuals have less than $5,000 in assets and many less than $1,000. The aged often learn that they can no longer easily get where they need to go, that their housing is inadequate, their pensions too little.

The effect on many of the elderly is to blunt the inherent values and joys of old age--a time to reflect on one's life, synthesizing experiences, passing on learned wisdom and philosophies to others, preparing for and understanding the coming of death. Rather than old age being a time to savor the final stages of human development, it often becomes a struggle to survive in what is perceived by many aged as an increasingly alien society. Perhaps most tragically, old age is lacking in a life-long sense of accomplishment and self-worth.

THE NATURE OF AGING

We do not know what aging is. Consequently, we cannot crisply separate the changes--social, behavioral, biological--intrinsic to aging, from those changes imposed by medical history, cultural and ethnic settings, the manner of a person's life, and other externals. Not knowing what aging really is or means, we generally rely on an arbitrary chronological division between middle-age and old age, usually set at 60 years. Commonly, a person passing this limit is conditioned to a uniform set of beliefs about aging and the aged: intellectual decline slipping into senility; inevitably, entry into an institution; and increased vulnerability to certain diseases and disorders--such as diabetes, atherosclerosis, arthritis, blindness, and dementia.

But these are pieces of a myth. Reaction times do slow with age, but most of the aged fully retain until they are very old, and often until their death, their ability to reason, their memory, their wit. The elderly sometimes seem lonely and withdrawn, but that may be the result of society withdrawing from them. The elderly commonly have decreased glucose tolerance, decreased creatinine clearances, and higher blood pressures, but not all are diabetic, have kidney disease, or are hypertensive. We associate the elderly--particularly the very

old--with institutions, but in fact, at any moment in time, only about 6 percent are there; the other 94 percent usually prefer to stay out, and generally can care quite well for themselves despite the fact that many suffer some chronic illness or impairment.

RESEARCH ON AGING

The implication for aging research that emerges from the preceding considerations is that to mount effective programs we must understand which changes with age are due to the normal process of aging itself and which are due to an individual's heredity, cultural setting, life style and so on. Therefore, in this research plan--most particularly, in the chapter on research priorities--two premises underlie the recommendations for research to be conducted by biomedical, behavioral, and social scientists:

- o effective programs for the aged--whether medical or social, treatment or prevention--must be based on knowing which changes in the aged are intrinsic to the aging process and which are not

- o if we are able to prevent or lessen the impact of non-intrinsic factors in the decline of the aged, then we are left with a unique and more satisfying concept of what aging is or should be--a natural stage in human development leading to a gradual and peaceful end

Basic studies on aging--biomedical, behavioral, and social --converge on the issue of designing services and delivering them: applying what we know so as to enable the aged to enjoy to the fullest a useful and active life span. Here, again, two interrelated premises apply:

- o existing services for the elderly are flawed, be they health-care delivery and compensation systems, community services inaccessible to the aged, or inadequate and sometimes unsympathetic mental health services

- o these shortcomings in existing services and delivery systems will become even more apparent as the average age of our population continues to rise, and as our population over 65 continues to increase in the coming decades

THE RESEARCH PLAN

Priorities for the three major areas of aging research--biomedical, behavioral and social science, and human services and their delivery--are described in Chapter III of this research plan for DHEW. Chapter IV outlines the required resources to address these priorities including trained research manpower, experimental resources such as human and animal populations, and access to validated data.

Demographic information that outlines the major issues affecting aging and the problems of the aged is given in Chapter II, while Chapter V gives a brief legislative history of research on aging within the DHEW. The sixth and final chapter gives very brief, and at this initial phase necessarily general, recommendations on future budget needs and means to approach a coordinated program among various DHEW units on aging and the problems of the aged.

THE NATIONAL ADVISORY COUNCIL ON AGING

The National Advisory Council on Aging of the National Institute on Aging was identified legislatively as the primary source of advice to the Secretary, DHEW, in developing this plan. And indeed the Council has done just that, displaying in the process remarkable enthusiasm, diligence, and generosity of time. The contents of Chapters III and IV, Research Priorities and Research Resources, respectively, are based directly on materials prepared and advice given by the National Advisory Council on Aging. Those materials--separate and detailed reports on the state of science and research priorities in the biomedical sciences, the behavioral and social sciences, and the developing science of human services and delivery systems--will be made available in the near future as companion volumes to the Research Plan.

Chapter II

THE NEED FOR RESEARCH

> "The Congress finds and declares that . . . the study of the aging process, the one biological condition common to all, has not received research support commensurate with its effects on the lives of every individual;" 1/

Long life expectancy is a decidedly modern achievement. At the turn of this century, four of every hundred persons living in the United States were age 65 or more. Now, only seventy-six years later, the proportion has more than doubled, and it is more than 10 of every hundred (Figure 1). Although this proportion is not expected to rise a great deal more in the next few decades, the absolute numbers of the aged will grow rapidly, and the projection is for about 30 million older persons by the year 2000. These changes in the age composition of our population lend increasing urgency to the need for reply to such critical questions as: How does our society meet the needs of older people? And, how does their increasing presence affect other groups in the society?

Nations prize longevity and regard it as an outstanding accomplishment when the majority of their citizens live to old age. Average life expectancy, or average age at death, may be regarded as one of the most important indices of social health and overall quality of life within a society. The problem this nation faces now is the lag that occurs in adapting its social institutions to the needs of older people at the same time that the needs of younger people are being met. In short, problems arise when a nation like the United States has not been prepared for the "sudden" appearance of large numbers of older people.

The aging society has brought with it a certain proportion of older persons who suffer from poverty, preventable illness, and social isolation. These persons, who can be termed the needy aged, create acute problems in the fields of social and health care. But broader issues stem from the needs of all individuals to adjust to the new rhythms of life that come

1/ The Research on Aging Act of 1974, P.L. 93-296

The Percentage of Population Aged 65 and Older Has Increased

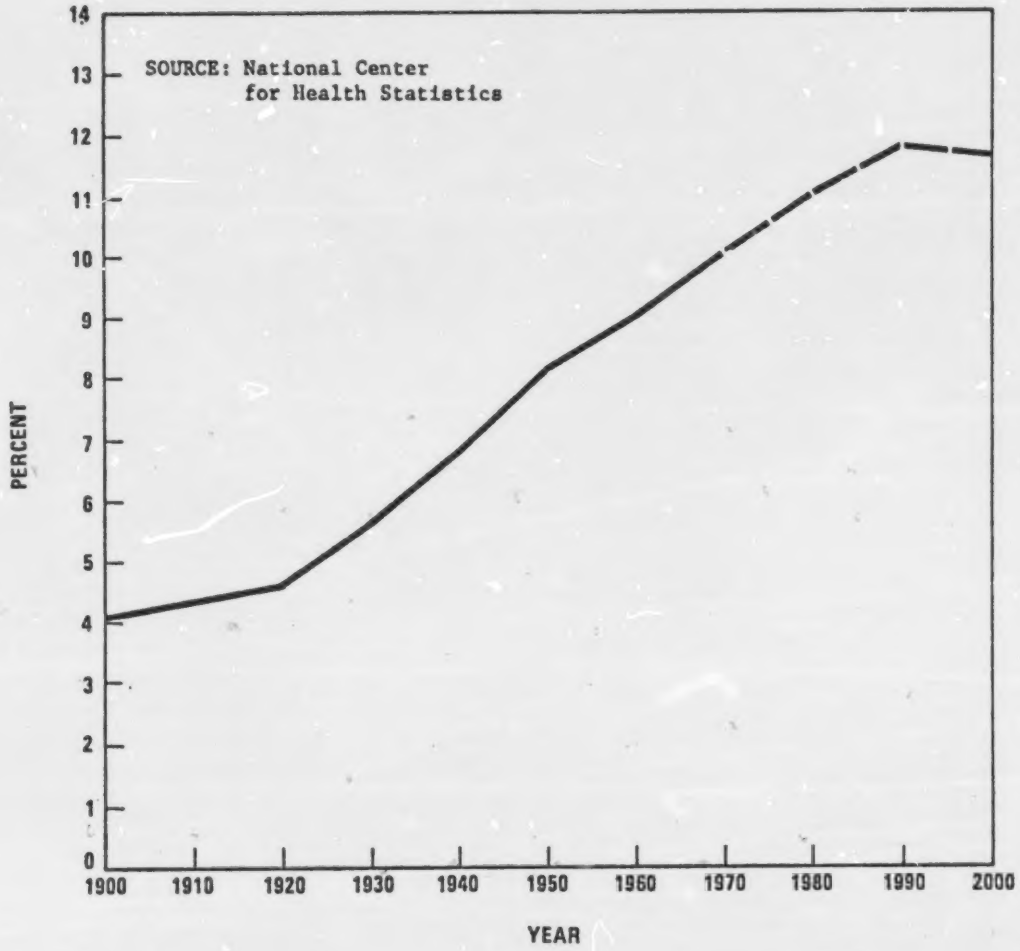


Figure 1.

with increased longevity: to new social phenomena such as multigenerational families, retirement, increased leisure, changing health status, and to the new opportunities and new problems of adaptation that accompany a long life. And for the society at large innumerable policy questions arise as the whole social fabric accommodates itself to the new phenomenon of the changing age distribution.

In over-simplified terms the American society in the 1970's faces two different sets of issues. On the one hand, there are increasing numbers of the "young-old," persons in their 60's and early 70's, who are relatively healthy and vigorous, a large number of whom are retired, who seek for meaningful ways to use their time, either in self-fulfillment or in community participation, and who represent a great resource of talent for society. On the other hand, there is an even more dramatic increase in the proportion of the elderly population which might be termed the "old-old." This comprises persons in their mid-70's, 80's and 90's, an increasing minority of whom remain vigorous and active, but a majority of whom need a wide range of supportive and restorative health services and social services (Figure 2).

For historical reasons, the old-old of the 1970's represent a disproportionately disadvantaged group. Many were immigrants who came to this country with little formal education; many worked most of their lives at low-skill occupations; many lost their occupational moorings during the Great Depression and did not recoup in the period of prosperity ushered in by World War II, nor did they build up sizable equities under the Social Security program as it developed during the 1940's and 1950's.

In succeeding decades, more and more older people will have been native-born, will have grown up in urban areas, will have had high school and college educations, will hopefully have been spared from widespread economic catastrophe, and will benefit from pension programs, social security, and government service programs of all types. Thus the persons growing old in the future will probably have very different characteristics from those who are presently old.

These different characteristics will in turn lead to vastly differing expectations, and as a consequence there is an urgent need to plan not only for those who are the present aged, but also for the future aged. The dimensions of the problem may be described in the following demographic terms:

- between 1900 and 1970, there has been an enormous gain in life expectancy, a gain of some 20 years. However, the gain is due mainly to lower infant mortalities, rather than better health care for adults; thus, taking 1950 rather than 1900 for the base year, life expectancy at birth increased by only one and three years for men and women, respectively; and for men aged 65 in 1950, life expectancy actually decreased.

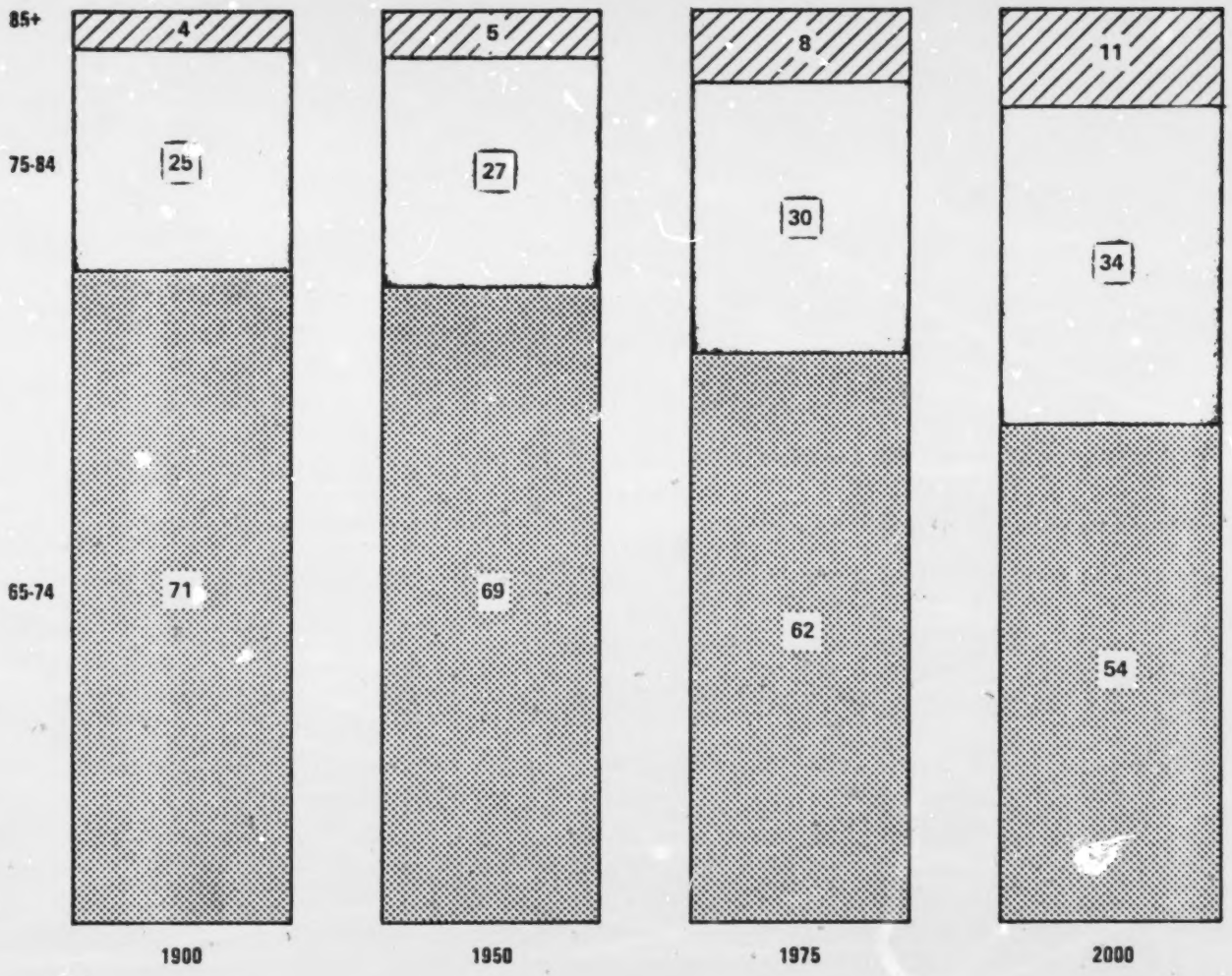
- women live longer on the average than men; and the increase in life expectancy at birth since 1900 has been greater for women (25 years) than for men (20 years). For non-whites, these increases have been even more striking (35 years for women vs. 29 years for men).

- present trends suggest that, barring major medical breakthroughs which might dramatically reduce death rates, further gains in life expectancy at birth will be relatively small. By the year 2000, there may be an increase in men of 1 to 2 years, and in women of perhaps 5 to 6 years.

- the numbers of older persons will increase dramatically in the next few decades, even without any new biological discoveries and without any sudden jump in the length of the human life span. At present there are over 22 million persons aged 65+ in the United States. According to current projections the total will be over 30 million by the year 2000. Compared to their present 10.5 percent of the total population, they will then constitute about 11.5 percent.

- while the increase in the aged population between 1970 and 2000 is not expected to be as dramatic as it was between 1940 and 1970--20 million to 30 million versus 9 million to 20 million--there will be another surge in the decade after 2000 when the post-war babies reach 65.

- the numbers of old-old (75+) will grow at a more rapid rate than the young-old; and the ratio of women to men will increase even more. Thus, by the year 2000 the older population will be more heavily weighted toward the very old (Figure 2), and particularly toward very old women.



SOURCE: National Center for Health Statistics

Figure 2.

- o expenditures for medical care for the elderly more than tripled between 1966 and 1974 (Figure 3). A continuation of present population trends leads inescapably to the prediction of yet further growth of these costs.

- o public funds are by far the most significant source of support for the nearly $27 billion costs of hospital care incurred by the elderly (Figure 4).

Given these factors and the projects which derive from them, it is obvious that the status of our citizens must receive greater scrutiny now and in the future. Carefully plotted research strategies offer the greatest promise for providing every citizen an old age which is as rewarding intellectually, physically, socially, and economically as our enlightened society can provide.

Expenditures for Medical Care for the Elderly
Have More Than Tripled Since 1966

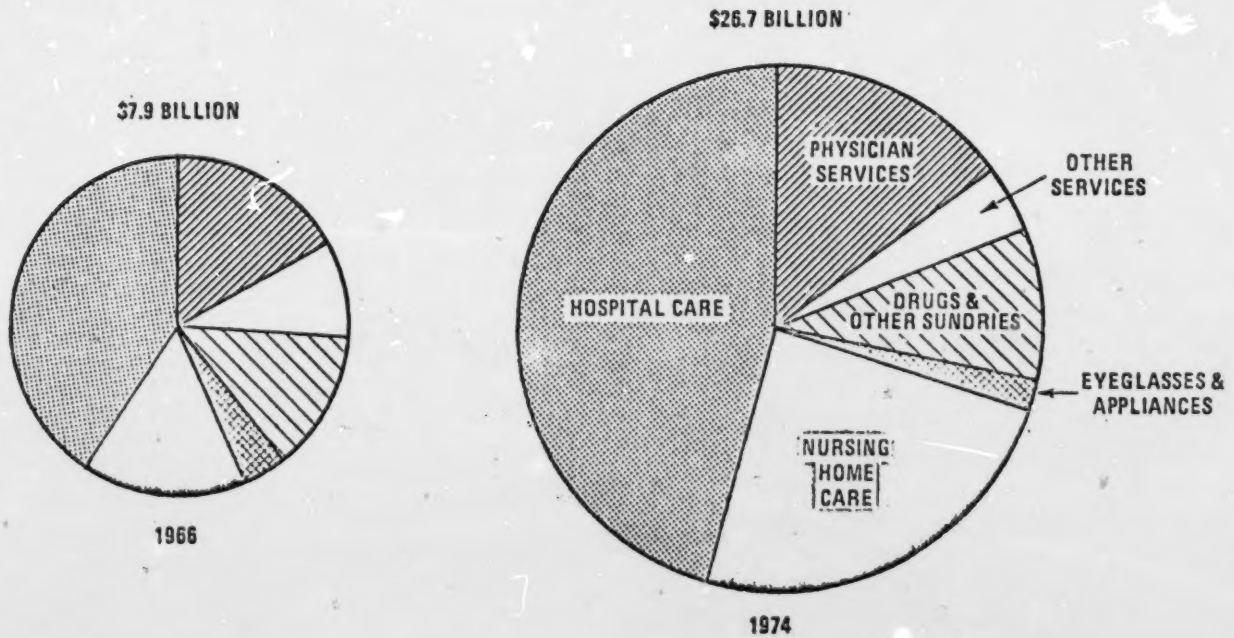


Figure 3.

SOURCE: National Center
for Health Statistics

Public Funds Pay the Highest Proportion of Hospital Costs for the Elderly

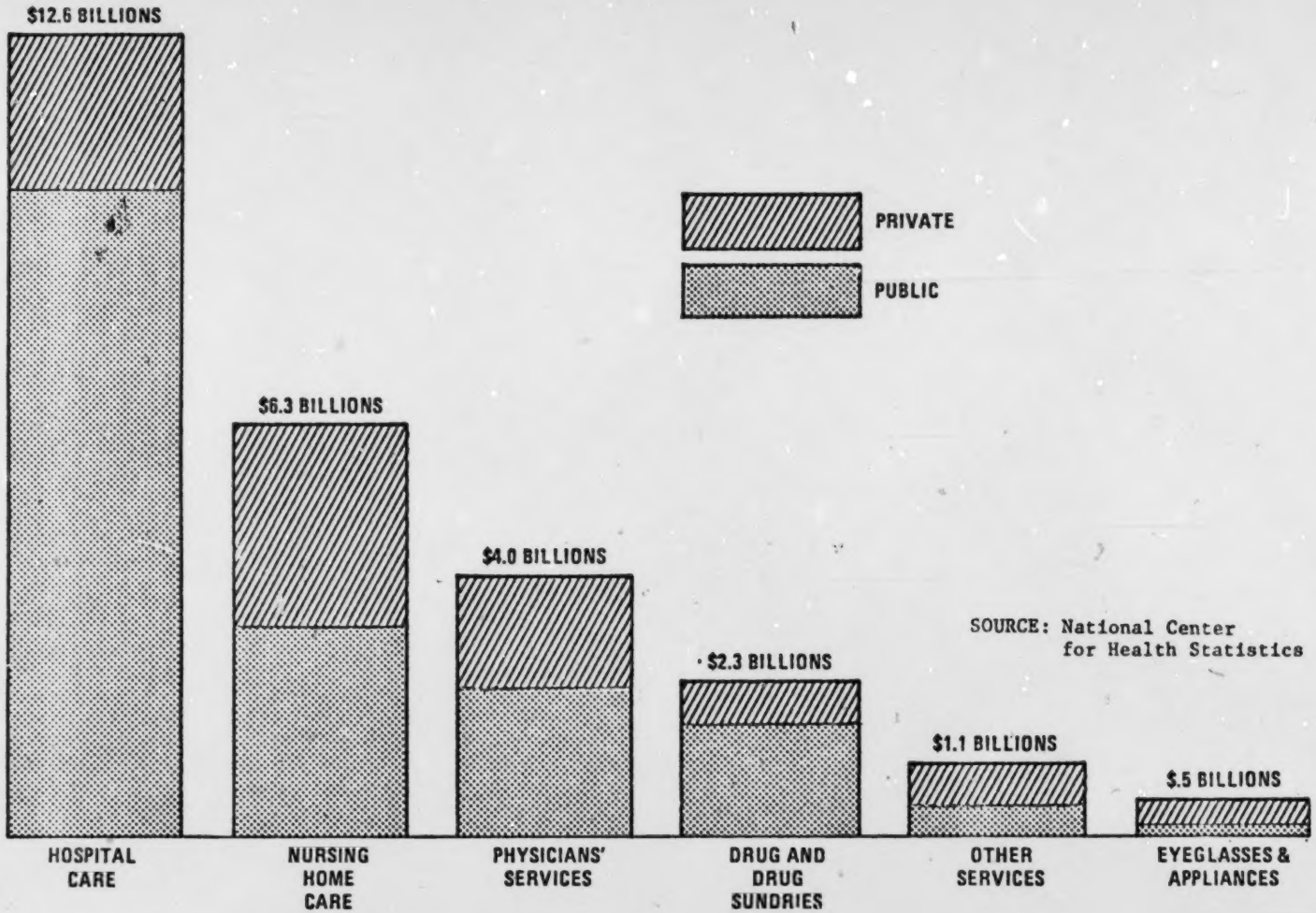


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Figure 4.

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Chapter III

RESEARCH PRIORITIES

> "The Congress finds and declares that. . .in addition to the physical infirmities resulting from advanced age, the economic, social, and psychological factors associated with aging operate to exclude millions of older Americans from the full life and the place in our society to which their years of service and experience entitle them." 1/

The Department of Health, Education, and Welfare, like other departments of the Government, is concerned with the well-being of society. Satisfying that concern becomes increasingly complex. For instance, the maintenance of health and often the effective treatment of illness requires a wide variety of social and health-supportive services in addition to medical skills.

Thus, mental and physical health depends to an increasing extent upon public programs of sanitation and hygiene; upon social policies that safeguard the physical environment against pollution and the depletion of essential resources; upon a variety of health delivery systems that include an emphasis on supportive services; upon equitable distribution of goods and services; and upon development of a human environment that reduces violent behavior, tensions, anxieties, and other social and psychological pathologies. Health also depends upon the willingness and the ability of individuals to care for themselves, and to apply the principles of preventive medicine by emphasizing in their lives those elements that foster health and the prevention of dependency and disability.

The interdependency of biological and social factors in effective health care is clearly apparent in efforts to understand and treat the problems of the aged. Appreciation of the position of the aged in our society and the effects of an increased proportion of older people on the entire society, requires emphasis on both biomedical and social research.

1/ The Research on Aging Act of 1974, P.L. 93-296

DIVISION OF RESEARCH PRIORITIES

The research priorities described in this chapter are given in three categories: the biomedical sciences, the behavioral and social sciences, and human services and their delivery. This division is somewhat artificial but still necessary. It is artificial because to divide priorities by areas belies the truism that the problems of aging and the aged are immensely complex, not readily divisible, requiring a holistic, comprehensive, and systematic approach.

However, the difficulties inherent in research on aging and the aged also make it clear that a single approach will at the very least lead to frustrations and disappointments and at the worst to failures in significantly advancing our knowledge. What is required is a well-planned and carefully coordinated application of the pertinent scientific disciplines--genetics, biochemistry, epidemiology, demography, sociology, psychology, anthropology, economics, political science, and others. With this discipline-oriented approach, the methods of many sciences can be applied to a common problem and a cadre of highly-trained researchers created, having as its central focus the problems of aging and the aged.

As in other fields of research, when new hypotheses on the process of aging are presented, the methodology needed to test them may not be available. Or where there is applicable methodology, there may be inadequate data. The encouragement of highly-competent researchers trained in specific disciplines can stimulate the flow of good ideas and hypotheses, enrich the methodology, and enlarge the stock of validated data.

An obvious goal of this intensified and concerted research effort is to foster the health and vigor of a growing segment of the American population. But what we learn from this effort will ultimately benefit the entire population. For if we can identify the factors that so enormously increase the risk of coronary thrombosis among the aged, we can also identify those factors that are preventable and then design suitable programs; if we can find better ways to deliver health care to the aged, the lessons learned may be applied to the delivery of effective and economic health care to the society-at-large.

BIOMEDICAL RESEARCH

Basic and clinical biomedical research can improve the quality of life for the aged (e.g., by relieving many of their painful disabilities), enable more people to fully realize their natural life span, and guide the creation of effective health-care services.

To approach these goals, we must be able to distinguish aging from disease. The elderly ill--and usually their families and physicians--commonly attribute many of their symptoms to aging and therefore regard them as immutable when their illnesses may in fact be treatable. Cancer, stroke, painful and crippled joints, mental confusion, and heart disease are not the inevitable tolls of aging; rather, they are the results of a variety of causes not intrinsically related to age. Nor are normal physiological changes with age to be regarded as diagnostic signs of diseases such as hypertension and diabetes.

But aging is the result of a series of fundamental, if poorly understood, biological changes, and therefore aging can affect the course, symptoms, prognosis, and effectiveness of therapy of diseases and disabilities usual to the aged. For example, normal changes in the immune system with age determine a person's resistance to infection. We must delineate these and other effects of aging on the characteristics of disease to help guide therapy, assay its effectiveness, and to evaluate the effects of various diseases on the process of aging.

To distinguish aging from disease and to examine the effects of one upon the other, we need a clear description of the aging process at all levels of life: the genes, their structure, expression, and regulation; the various constituents of the cell, such as the mitochondrion and nucleus; the cell itself; organs and organ systems, such as the respiratory, nervous, and cardiovascular systems.

Without knowing what changes occur with age, we cannot find their causes. Nor can we reliably determine the normal range of physiological, structural, and other changes with age. Different systems of the body--endocrine, cardiovascular,

gastrointestinal, and so on--age at different rates that are determined to varying degrees by a person's genetic makeup and environment. These progressive changes modulate the characteristics of disabilities, diseases, and infirmities suffered by the aged, including arteriosclerosis (hardening of the arteries), many of the common forms of cancer, diabetes mellitus, osteoporosis (loss of bone mass), osteoarthritis (chronic degenerative joint diseases), benign prostatic hypertrophy (enlargement of the prostate gland), pulmonary emphysema, cataracts, depressive illnesses, and senile dementia (a form of mental deterioration).

These diseases--many the province of disease-oriented Institutes of the NIH--can be extremely powerful probes for understanding the aging process, since "nature nowhere so reveals her usual workings as when she deviates from her usual paths." The stance of the researcher on aging is to relate the nature and course of those diseases to genetically controlled changes with time in biological structures and functions. What is ultimately gained is an understanding of the interacting influences of genetics and environment in age-associated diseases as different as osteoporosis and senile dementia.

Clearly, biomedical research on aging has implications for virtually all the major ailments of man. By probing possible relationships between the aging process and the development of cancers common to the aged, we may better understand the causes and nature of other cancers; by identifying the factors leading to coronary thrombosis, we perhaps can design programs of prevention, not only for the aged, but also for those still young and in the midst of productive careers.

Biomedical research on aging can be divided into two broad categories: the mechanisms of aging and the interaction of aging with external influences. The first covers the gamut from molecular genetics to clinical aspects of disease in the elderly, while the second analyzes the influences on aging of diet and nutrition, drugs and their metabolism, and a variety of other chemical and physical factors. The approaches used for both categories range from the very fundamental to the applied, from the biology of aging cells to longitudinal studies of aging populations, from basic immunology to analyzing the response of the elderly to primary and secondary infections, from an analysis of cell structures to a study of the effects of different diets on resistance to diseases.

Priorities

Against that background, a number of initial, highly selected research priorities can be emphasized:

The Cell--Structure, Biochemistry, Genetics, and Physiology

Cellular research related to aging has emphasized the identification and description of apparent cellular changes with age. While we now have a large and still growing list of such changes, we do not know which are related directly to the aging process and which are not. Fundamental cellular studies should help distinguish the significant changes and may answer essential questions, such as

- o the effects of experimental and natural changes on the various constituents of the cell, including their functioning, physiology, and structure
- o the causal relationships, if any, between the decline of the numbers of functional cells and the decline of the physiological functions of organs and organ systems
- o factors influencing the life span of cells

Normal Physiological Changes With Age

We have little quantitative and reliable information on physiological changes with age, particularly in those organ systems--cardiovascular, pulmonary, endocrine, and nervous--whose failures account for a large proportion of the mortalities and morbidities among the aged. Well conceived and executed investigations of normal physiological changes with age can

- o support the basic objective of aging research of extending the useful life span
- o establish physiological baselines by age to enable other NIH Institutes more effectively to probe various disease processes
- o assess the value of exercise in slowing the normal decline of physiological functions.

Immunological Changes

The immune system is intimately related to the body's adaptation to environmental stress and change. Various normal immunological functions appear to decline with age. Associated with these declines--and perhaps causally related to them--is the increase with age of the incidence of immunologically related diseases such as various auto-immune diseases, cancer, and antigen-antibody diseases. Studies of the normal range of immune activity with age may lead to experimental programs on the restoration or slowing of declining immunological functions. In addition, answers may be provided to some provocative questions, including

- what is the normal level of immune function for an aged person?
- what role does the immune system have in the aging process?
- why do the elderly respond differently--and often more poorly--to infections than the young?

Clinical Diagnosis--Definition of Normal Standards by Age

Physiological changes with age obviously have an impact on the diseases of the aged. For example, diseases such as diabetes mellitus, tuberculosis, and bacterial endocarditis display different symptoms in the elderly than in the young or middle-aged; the pain typically associated with some illnesses--coronary thrombosis, intestinal obstructions, and acute appendicitis--may not be present or as obvious in the elderly.

Such changes in the presentation of illness, due in part to normal physiological changes, must be examined collaboratively by physiologists and clinicians. There is an absence, by and large, of physiological standards for the elderly. When measurements have been made, they have typically been made on men, despite the well-recognized and often major differences in many physiological functions between men and women. Consequently, considerably more research emphasis must be given to establishing normative information regarding aging women.

Interaction of Aging and Disease

There is poor understanding of the interactions of the normal pathological and physiological changes of aging with various diseases. The result may be, as with maturity-onset diabetes, an inability to distinguish aging changes from disease processes. Or our lack of knowledge may make it difficult to prescribe therapy or to design preventative programs, as is the case with atherosclerosis, in which the factors that contribute to its incidence among the elderly have not been adequately studied.

Organic Brain Disorders

Organic brain disorders are due to chemical or physical changes, and may be reversible or chronic. Although they occur most frequently among the elderly, efforts to find causes of organic brain disorders should help victims of all ages. We must also intensify our efforts to improve diagnostic tests and therapies, both being now inadequate.

Changes in Nutrient Requirements and Metabolism with Age

There is no rational basis for nutritional recommendations for the elderly, an awkward fact since many public and private programs center on or include the delivery of nutritional services to the elderly. Moreover, diet may be a factor in producing certain diseases such as atherosclerosis, and in ameliorating others, such as diabetes.

We need fundamental information regarding changes in nutrient metabolism with age if we are to define the needs of the elderly, plan effective and economic nutritional programs, and use diet as one element in blunting the impact of physiological decline.

BEHAVIORAL AND SOCIAL SCIENCE RESEARCH

For the next several decades, the United States--and other developed countries--will have an increasing population of the elderly, one in which females are predominant. The effectiveness of policies designed in response to these population changes will depend on how well we understand the aged, individually and as groups. Partial knowledge and false assumptions may lead to policies and legislation with unexpected, perhaps disappointing results.

The elderly are a diverse group, with individual differences often more telling than similarities. But to aid analysis, the aged population can be divided into the old and very old. The old are those as young as sixty, probably retired, usually healthy and vigorous, often anxious to apply their talents, knowledge, and time meaningfully, and therefore constituting a valuable if often unused resource. The very old are 75 years of age or older. Many in this group are vigorous and self-sufficient; others can manage their lives if given some support by health and social services; while a small number--but one that grows with age--need sustained support.

Even allowing for the division of the aged population into two groups, there is still the fact that the aged are a highly diverse population, not readily quantified or labeled. Also, there are not adequate theories to help us to understand the behavior of aging persons or groups. That is true whether the pertinent discipline is psychology, sociology, anthropology, economics, or political science.

However, the increased level of research on the aged beginning in the 1950s has led to several insights on which effective research programs can be based.

One such insight is that, in contrast to prevailing myth, most of the "normal" aged--70-75 percent of those over 65 years of age--are intellectually and socially able, productive (given the opportunity), mentally vigorous, interested in their surroundings, eager to participate in the social life of family, kin, and community. Where there are decrements and apparent declines, the cause is not necessarily the biological process of aging, but other, often controllable impositions only partially related to age--disease, social isolation, poor diet, limited education, economic plight. The inability of some aged persons to cope intellectually and socially is usually due to stresses associated with aging than caused by it. This view, that at least some declines are not inexorably bound to the normal pattern of human development, forces the conclusion that it is possible to prevent or treat many of the intellectual, social, and emotional problems of a significant proportion of the aged population. Moreover, it emphasizes the ability of many of the aged, given the opportunity, to lead independent, self-sustaining, satisfying lives.

That a substantial majority of the aged are indeed intellectually and socially competent is supported by the demonstrable fact that integration of the older person in the society is the norm rather than the exception in every society that has been carefully studied, including the United States. Institutionalization is limited to a small fraction of the aged. A significant number of the aged able to participate socially is excluded for a variety of reasons--apparent disability or illness, or a latent prejudice against any aged person.

How an aged person responds to stress--illness, deep grief, financial strains--is largely a function of the life lived and the experiences had. It has little to do with age or aging per se. Rather, the capacity to cope is dependent primarily on education, work patterns, family--all the elements that structured one's life, modulated it, and gave it meaning. And, a person's character--his or her individuality--remains intact until near if not to the very end of life.

The fact that individuality is maintained into very old age requires that programs for the elderly, to be effective, must provide a wide range of options--in education, in work and leisure, in housing and living arrangements, in social and health services. Pervading these policy considerations is the fact, established by social research, that all modern developed societies have the wherewithal, even with shifting proportions of workers and retirees, to maintain adequate income for the elderly and finance essential services for those who need them. The willingness to do these things is another matter, and is dependent on political judgments, cultural values, national priorities, and principles of equity.

Finally, an issue posing very difficult questions is the ability of modern medical technology to modulate if not control the process of dying. Rising concerns, generated by humanistic and personal insights, have prompted clinical, educational, and other research programs to help seriously impaired or dying individuals and their families. There are also emergent ethical and scientific issues concerned with the definition of death and the use of technology to prolong life.

Priorities

Against that background, a number of research priorities can be recommended to build on what we know and to aid in the making of effective policies for a rapidly growing segment of our population:

Reduction and Prevention of Dependency

Dependency--social, economic, and physical--is a particularly serious problem for the very old, and for the young who care for them. There are several issues that should be studied as part of efforts to blunt the impact of such dependencies or to prevent them altogether

- o the process by which an impairment becomes a disability, including the pertinent social, psychological, and biomedical factors
- o the physiological and psychological variables related to changes in cognitive functioning in the aged; i.e., memory, learning, intelligence, and perception
- o distinction of age-caused from age-associated decrements, and identification of those that can be prevented, treated, or ameliorated

Given the fundamental mental and physical vigor of the aged, research on dependency leading to effective programs can give the elderly fruitful and satisfying lives.

Income Maintenance

As the proportion of retired persons in our population increases, so will the absolute costs of income maintenance programs. How will these programs be paid for? Answers may be obtained by expanding the use of demographic projections and models--the first to estimate the probable costs of income maintenance programs, and the implications for corporate and personal income taxes; the second to simulate the economic and social effects of alternative ways to provide income and service to the elderly.

Age Discrimination in Employment: The Retirement Process

The rising number of elderly people, the increased financial burdens of support programs, and the evidence that chronological age itself usually has little bearing on social and intellectual competence are several of the elements forcing an examination of why people retire, particularly of the elements--social, financial, employment--that enter into individual retirement decisions. The ultimate effects of retirement pressures on the larger society should continue to be examined. In addition, we should

- o establish functional rather than chronological criteria of social and intellectual competence
- o seek mechanisms--such as demonstration programs--to enable people to be economically productive beyond the usual retirement ages
- o examine the attitudes of both young and old toward work and leisure

Life Experiences and the Aged Personality

We need precise information on the effects of life experiences on the elderly. For example, does the aging cohort (age cluster or group) that lived through the depression display a different social and behavioral pattern than a cohort that did not? How are different work histories reflected in financial security (or lack of it) in retirement? What are the effects of changing patterns of work and leisure on the lives of different cohorts? Subtle influences of experiences as a child and young adult should be examined, including

- o the management of crises
- o different social roles in family, work, and community
- o negative stereotypes of the aged

Social Competence and Social Integration

An examination is needed of the factors--social, cultural, and environmental--that make for social competence and personal satisfaction in late life, irrespective of the level of social integration. Specific elements that should be examined include

- o the different problems of men and women in maintaining social competence and, where desired, achieving social integration
- o racial, ethnic, and social factors

The Aged and Their Families

Family and kin provide important social and sometimes economic support for many of the elderly. What is the nature of the relationship of the elderly with their families? How do different relationships--perhaps determined by different ethnic

and cultural values--affect dependency reduction and the maintenance of social competence? Are the changing roles of women--more working--affecting the abilities of families to care for their aged? If so, what are these effects and what do they portend? How are changing family structures--for example, single-parent families--altering the relationships between the elderly and their families and kin? These and similar issues must be addressed as part of an effort to develop policies that emphasize the family as one crucial supportive resource.

Mortality Rates: Men vs. Women

On the average, women live eight years longer than men; and in 1974 there were 143 older women per 100 men, with the gap widening. Genetic predisposition, hormonal differences, and stress are among the explanations offered. More intensive research is needed to specifically identify the elements that account for the higher morbidities and mortalities of men.

Social Experiments

The Medicare and Medicaid programs are natural social experiments, since they can be used to examine the effects of certain types of payment mechanisms on the lives of older persons, their families and communities, and various parts of different health-care systems.

There should also be limited, small-scale social experiments on

- flexible or "phased" retirements
- the impact on older persons of new educational opportunities that provide not only preparation for second careers and meaningful leisure, but also for self-care in old age
- alternative forms of social and health service systems
- alternative physical and social environments, including housing and long-term care facilities

Psychological and Psychiatric Interventions

The maintenance of intellectual functioning among the aged and prevention of so-called organic brain syndromes and senile dementias are obvious and critical importance. Well-planned

programs of research should stimulate the development of a clinical psychology and psychiatry attuned to the mental health problems of the aged.

Government Policies and the Aged

The effects of various governmental policies upon the current and future aged should be examined. What are the effects of manpower and training programs on employment patterns of the aged? How do macro-economic policies used to stimulate the general economy or restrain inflation affect retirees? What are the consequences for older persons, their families, and communities of governmental policies on housing, transportation, health care, and pensions? Are there differences in the respective effects of such policies on the rural and the urban elderly?

As the population of older persons enlarges and as the characteristics of successive cohorts (clusters or groups) diverge, such studies will be particularly important to city and regional planners for the coming decades.

RESEARCH ON HUMAN SERVICES AND DELIVERY SYSTEMS

Older persons must have an effective network of facilities, programs and services to survive short-term crises and meet long-term needs. Without these supports many lose their capacity to live independently or semi-independently in their own homes or communities.

Services for people in the U.S. are provided by a pluralistic system of governmental (federal, state and municipal), private non-profit (voluntary) and commercial agencies. But many of these agencies have not developed programs that meet the special needs of the aged. For example, the elderly are commonly not provided preventative medical services--such as early diagnosis and treatment--that can forestall new problems.

Services have frequently been separately developed or legislated with no planned relationship of one system or set of resources to another; with conflicting legislative language, regulations, and funding policies and practices; ambiguous program objectives; and incongruence between agency or program goals and needs of older persons.

Given the varied and changing needs of older persons, programs of health and social care to be effective must be comprehensive--ranging from provision of simple information to direct services needed to maintain physical and mental functioning. The design and the evaluation of effective, truly comprehensive programs must be based on systematic, well-planned research and analysis.

Research has been or is being done in several service areas of particular pertinence to the elderly--physical, mental and dental health; nutrition and food services; physical living environments; employment and other economic supports; the commercial marketplace; transportation; communication; social services; legal and physical protection; education; civic participation; leisure and recreation; and spiritual well-being.

These studies have led to a number of findings that can be usefully addressed to improve the effectiveness and range of services and their delivery to the aged:

Medical Care

Medical knowledge and techniques are available to ameliorate many of the illnesses of late life. But existing health-care systems are organized primarily to deal with acute, episodic illnesses in hospital settings. Institutional health-care systems are, by and large, not linked to community-based systems for primary, preventive, rehabilitative or supportive care, although such arrangements are particularly suited to the need for the long-term care of many older citizens. Compounding the lack of adequate facilities for the care of the aged is the fact that medical education does not provide an adequate basis for modern geriatric care.

Home Care

While older persons have high rates of chronic illness and disability, they continue to function in the community when services are available. But a study in 1972 found that 54 percent of all American communities, including 99 with populations of more that 50,000, had no home health agency whatsoever. And less than 1 percent of Medicare expenditure went to home health services in 1971. Yet, home care may save health dollars, and in many cases is the most appropriate option for proper care of the older person.

Mental Health Care

Studies of mental health in later life indicate that approximately 15 percent of the population 65 and older are in need of treatment or intervention to maintain their mental health. For each 5 years beyond 65 the total proportion of persons moderately or severely mentally ill increases, from about 10 percent at age 65 to approximately 30 percent at age 80. Those elderly thus afflicted are responsive to treatment if or when appropriate treatment is developed and provided.

Pertinent research questions are: What kind of a delivery system should be developed to meet the mental health problems of the elderly? Should mental health services be delivered separately from other health care and social service systems? Should a new structure such as "health maintenance organizations for older persons" be created that integrates physical and mental health, social and other services?

Nutrition Services

Food consumption studies confirm that the diets of older persons are often below standard both in quantity and quality. While poorly nourished people are at greater health risk, and nutrition is related to certain diseases which are reversible, the number of nutrition programs for older persons is very limited. Demonstration models of nutrition services for the elderly have been largely descriptive in nature, testing feasibility and determining cost. There is also a need to study the impact on the client and community, to identify nutritionally vulnerable groups, to test ways to incorporate nutrition counseling into primary health care, and, most fundamentally, to determine the nutritional needs of older persons.

Housing Services

Specially-built housing and age-oriented environments often benefit the elderly. Improvement of present housing is even more important than specially-built housing, since 70 percent of the housing occupied by the elderly is also owned by them. Research on specific housing alternatives and service packages, and cost estimates for those alternatives and service packages, should quickly yield benefits.

Institutional Care

Where the appropriate option is institutional care, research is nonetheless needed to understand and cope more effectively with the impact of institutionalization. Studies are needed to assess the quality of institutional care.

An estimated 2.4 million persons [redacted] and older do not need institutionalization, but do need appropriate shelter and services to remain in the community. A critical problem is to find the optimal match between each individual and that environment which is most capable of meeting his or her needs--a task to which research can contribute wisdom and methods.

Reimbursement for Services

Availability and use of long-term care services tend to follow changes in reimbursement mechanisms. Social experiments are needed to provide the data to analyze the relationship between various reimbursement methods and the effectiveness of long-term care and other social services.

Transportation and Communication Services

Studies indicate that transportation is least adequate for the aged groups most in need--the physically frail, persons without family or kin, minorities, inner-city dwellers and the poor. Improved transportation is a means of linking people and services. Research and social experiments to create and test other ways to link people and services are still needed, including home delivered services of all types and the use of new technologies, for example cable television and citizen band broadcasting.

Legislated Social Services

Revenue sharing, Title XX of the Social Security Act as amended in 1975, and similar legislation apparently has not significantly increased the level of social services for the elderly. Research is needed to determine how resources provided in the legislation can be better deployed on behalf of the elderly.

Social Security

The Social Security system remains a major source of ret rement income, replacing an estimated 25 percent of pre-retirement earnings. While Supplemental Security Income is an

improvement over Old-Age Assistance, the projected increase in the number of beneficiaries has not materialized. Research is needed on

- o the reasons--including institutional problems--why greater numbers of qualified individuals have not applied for Supplemental Security Income

- o improved techniques for informing and registering those who are qualified for SSI

Medicare

Medicare, providing third-party payments of certain health costs, has obviously helped our older citizens. But increasingly, it pays less of the older person's health bill and seems to be least adequate in the most serious area--long-term care. Continuing research and analysis of Medicare's drawbacks and of possible remedies are needed.

Comprehensive Services

To respond to the growing needs of present aged and the increasing number of future aged, research in the delivery of comprehensive services is urgent. No community in the U.S. has a full range of services for the aged, and limited social experiments have not adequately documented the optimum range and mix of health and social care programs. While many of the findings of these experiments have been useful in planning and policy development, what we do know is small compared to what we do not know.

Studies of options for providing continuity of care, including preventive and rehabilitative care and methods for organizing and financing services and their delivery, that can yield practical benefits for the care of older Americans, remain to be conducted. Two promising models for experimentation are:

- o "one stop" centers, perhaps sited at specially designed housing for the elderly, to which the elderly can come with a minimum of travel and inconvenience

- o a new type of "health maintenance organization" for older people that provides physical and

mental health care, social services, financial assistance, and aides for those who need help with personal and household services

Experiments on these and other models could address such questions as what are suitable mixes of a range of services? What impact does integration of services have on the older individual? How does integration affect use of services and cost efficiency? What is the role of voluntary groups and agencies? What is the appropriate role of family, ethnic and neighborhood groups in the provision of services? What is the cost and effectiveness of alternative models of service delivery?

Data

Data are needed on what services do exist, their adequacy and gaps, which are and are not used, and who in the population uses them. More exact demographic and epidemiologic information about population trends is also needed to anticipate and prepare for services needed by the future aged.

Chapter IV

RESEARCH RESOURCES

> "The Secretary may also provide training and instruction and establish traineeships and fellowships, in the Institute and elsewhere, in matters relating to study and investigation of the aging process and the diseases and other special problems and needs of the aged." 1/

Reduction of psychological and physical dependency, extension of active and useful life, prevention and treatment of age-associated diseases, design of service systems to foster self-care by the elderly--these and other research priorities described in the previous chapter require several resources, including:

- well-trained investigators given the opportunity to do research on aging and the problems of the aged
- animal and human populations in which the normal and abnormal aspects of aging may be investigated
- basic data--demographic, epidemiological, clinical--needed to shape research programs and determine their effectiveness

MANPOWER: EDUCATION AND TRAINING

The Research on Aging Act of 1974 specifies two purposes for advanced education and training in age-related areas:

- as preparation for research on "the aging process and the diseases and other special problems and needs of the aged"
- "to ensure the education and training of adequate numbers of allied health, nursing, and paramedical personnel in the field of health care for the aged"

1/ The Research on Aging Act of 1974, P.L. 93-296

With the present size and prospective growth of the aged population, gerontologic research is an undeniable need. The essential element in fulfilling that need is a research community--a sufficient number of highly trained biologists, chemists, physicians, sociologists, psychologists, economists, and others--with a long-range career commitment principally to research on the process of aging and the needs of the aged.

The question of what is a "sufficient number" brings in the stipulations of the Research Training Act of 1974, which mandated that the Secretary of the Department of Health, Education, and Welfare "arrange for the conduct of a continuing study to establish (a) the Nation's overall need for biomedical and behavioral research personnel, (b) the subject areas in which such personnel are needed and the number of such personnel in each area, and (c) the kinds and extent of training which should be provided such personnel . . ."

The "continuing study" is being conducted for the Secretary of the Department of Health, Education, and Welfare by a committee of the National Research Council. In its first report, issued in 1975, the committee emphasized the importance of training grants for modulating the supply of trained researchers--MDs and PhDs--in various fields, including biomedical, behavioral, and health services. The report emphasized the considerable flexibility provided by postdoctoral training: "Support of postdoctorals does not increase the manpower pool, but provides for its improvement and for diversification into more applied areas of special importance . . . [P]ostdoctoral training programs provide the means for preparing researchers more rapidly for emerging and recently recognized priority areas."

The 1976 report of the National Research Council repeated this emphasis on post-doctoral training, and, of special pertinence to research on aging, noted that the "opportunity for M.D. and Ph.D. graduates to be trained together during the post-doctoral period is widely regarded as a valuable aspect of this experience."

While postdoctoral training grants are certainly an effective mechanism for increasing the numbers and competence of trained researchers on aging, other support mechanisms are also important, including predoctoral and institutional training grants. Training grants can also be used to catalyze the creation of graduate and postgraduate programs that focus on the <u>interdisciplinary</u> aspects of research on aging.

Whatever mechanism is used, they must assure that the programs are of uniformly high quality. To quote again from the 1976 report of the National Research Council:

> "...the federal responsibility for health research training goes beyond the simple assurance of access to graduate and postgraduate training, and extends to the provision of programs that are of a high level of excellence in areas relevant to the national interest [emphasis added]."

Remedies which are urgently recommended for alleviating deficiencies in available trained manpower include: expansion of the current support of predoctoral, postdoctoral and institutional training grants for research on aging; expansion of pre- and postdoctoral fellowships and Research Career Development Awards; and reintroduction of authority to support Special Fellowships, in order to attract established investigators to research on aging. The dimensions of this urgency are defined in disciplinary terms as follows:

Biomedical Sciences

In the basic biological sciences, for example, there are currently no adequate, well-rounded research training opportunities for pre- and postdoctoral students wishing to specialize in the biology of aging. Nor is there any existing mechanism for an established investigator outside of gerontology to enter the field.

The manpower needs for clinical research efforts can be met most effectively by postgraduate training programs that enable young physicians to apply their knowledge to specific clinical issues. Such trained researchers would ultimately perform in concert with the physician, dentist, and nurse to identify and manage clinically significant changes; to analyze and guide the prevention and treatment of geriatric infirmities and diseases; and to support programs that enable the aged to function despite a range of crippling, usually chronic disorders.

Presently, clinical research training programs are wholly inadequate. There is no requirement by any medical schools that their students receive part of their training within nursing homes, long-term care institutions or home-care programs. Among the medical schools there are only two formal training programs in geriatric medicine, and very few centers in which any sort of training for research in clinical gerontology can be obtained. This gap between growing need and the limited number and scope of train-

ing programs is especially critical now as more medical schools, VA hospitals, and other research centers seek to establish coordinated programs on research in aging. Training programs to meet this growing need for clinical researchers might encompass a 5-year postgraduate program in internal or family medicine which emphasizes clinical gerontology and includes didactic work in a school of public health.

Clinical gerontology should also be a standard part of the graduate and undergraduate curricula of schools of medicine, dentistry, nursing, and allied health. By and large medical students now get little or no exposure to the medical problems of the elderly, a lack reinforced by the prejudice toward the aged often displayed by teaching and practicing physicians. The introduction of clinical gerontology into curricula may also reinforce a principle that applies to other areas of clinical medicine--that more attention must be given to the prevention of illness rather than simply its treatment.

Behavioral and Social Sciences

Training programs are needed that will enable graduate and postgraduate students to apply their education to basic and applied research issues in aging. Such training programs should emphasize the interdisciplinary nature of many issues in aging; for example, the valuable insights provided when psychologists, economists, and sociologists cooperatively probe the factors that create dependencies in aging individuals and groups.

Human population studies that deal with the social and psychological problems of aging such as grief, loss of family roles, or the end of regular employment provide the opportunity to improve the quality of life for the elderly and may help unlock some of the problems that beset our young and middle-aged populations.

Human Services and Their Delivery

A professional cadre is needed concerning itself with research on how services are planned, organized, delivered, and evaluated. It must design programs that can deliver effective medical, social, economic and other support services to the elderly against a backdrop of limited funds, shifting national and local priorities, insufficient chronic care facilities, and various cultural and social settings. Such program design must be sensitive to the problems of many of the elderly--inadequate housing, income, medical care, nutrition, and social services.

Graduate and postgraduate students as well as established professionals must be provided training for research on administrative, political, social, health care and other service systems. And, again, mechanisms must be created for a multidisciplinary approach where needed.

Research on Education and Manpower

The specific needs for education and manpower in different fields pertinent to research on aging must be supplemented by research on:

- the educational process--to test, evaluate, and develop methods and models of gerontologic and geriatric training
- manpower needs--to analyze the types and numbers of personnel required now and in the future to meet specific needs for researchers described above

RESEARCH MECHANISMS AND TOOLS

Effective research requires not only competent manpower but also mechanisms and tools suited to the problems to be addressed. Mechanisms include regional and university-based research centers where many can focus on a particular problem. For example, recent studies on alcohol and aging required the collaboration of clinical gerontologists, physiologists, pharmacologists, biomathematicians, and experimental psychologists.

While a few centers do exist, most gerontologists still work separately and in relative isolation. Lack of centers also reduces the opportunities for collaborative research and the likelihood of attracting to gerontology able investigators from other fields. Such regional, university-based research centers would not only provide foci for the concentration of a small pool of first-class talent, but would also provide more effective training for students, as well as easier access to necessary resources at reduced cost.

Experimental Resources

Human population groups are the most important single experimental resource in aging research. Finding such groups, recruiting them, and gathering the needed data is difficult and often expensive. The effort may require, particularly in longitudinal studies, literally a lifetime of work--an extraordinary commitment by investigators, research subjects, and funding agencies. Yet such studies, cross-sectional and longitudinal, can now be done with greater accuracy and with a

larger yield of data than was possible 10 years ago. The discussion of research priorities in Chapter III delineated the promising issues which can be addressed by such studies. For example, aging and atherosclerosis are separate, distinctive processes, but their frequent association complicates our understanding of the two basic processes involved--one leading to a normal stage of human development and the other to disease. Longitudinal studies of biochemical, physiological, social and behavioral characteristics on populations largely free of atherosclerosis could add enormously to our understanding. Such studies could provide measures of the normal aging process, including the rates of biological aging, independent of the effects of the common chronic diseases of middle- and old-age. Typical of other questions that can be asked are:

- what living arrangements for the elderly produce the greatest life satisfaction and the lowest rates of morbidity and mortality?

- what is the relationship of socioeconomic status to differences in longevity between men and women?

A small number of population laboratories seems to be the best mechanism for carrying out large-scale population studies. Such laboratories must have:

- cooperative and adequately large populations suited to the questions to be studied

- sophistication in demography, epidemiology, biostatistics, and computer sciences

- investigators willing to make a long-term commitment --over a decade--to studies of human populations

- long-term commitment of uninterrupted financial support

Animal Populations

A wide variety of organisms other than humans are or should be used in aging research. These include animals such as subhuman primates, pedigreed dogs, rats and mice; metazoa such as nematodes, protozoa such as the ciliates and the amoebae, and cultured mammalian cells.

Rats and mice are useful and popular in aging research because they have short lives, cost comparatively little, and can be genetically defined. Moreover, colonies of rats, mice and sub-

human primates can be reproducibly maintained in institutional and commercial facilities for shipment to investigators. However, the availability of such colonies is at present extremely limited; only two NIH-supported colonies of rodents for use in aging research now exist. These do not meet the present demands of the scientific community, much less their projected needs.

Thus, there is an urgent need for regional animal distribution centers to facilitate and encourage the interest in aging research generated the past five years. Similarly, support of existing subhuman primate centers should be vastly increased the next several years.

Different in scope but equally essential to aging research is the maintenance and expansion of existing banks of cultured mammalian cell lines. The availability of such cell lines has already spurred new directions in aging research, including:

- o analysis of the biochemical similarities and differences among cells taken from species with different life spans

- o establishment of cell banks as repositories for cells taken from individuals afflicted with genetic diseases related to premature aging, such as Werner's syndrome and progeria.

INFORMATION SYSTEMS AND RESEARCH EVALUATION

To improve the effectiveness and efficiency of research we should have:

- o an inventory of research projects underway or completed

- o access to data from prior research surveys, censuses, and so on

Inventory of Research

A centrally-available index on prior and current research is important to a field such as aging that cuts across many related subjects and disciplines. A system for maintaining a continuing inventory of research in aging could help to:

- o avoid unwarranted duplication of research

- o identify trends and patterns or reveal gaps in efforts

- o stimulate new ideas for research planning or for innovations in experimental techniques

- o provide a resource for technological forecasting and development

Such a central inventory could link with more generalized research inventories--e.g., the Smithsonian Science Information Exchange (SSIE) and the Computerized Retrieval of Information on Scientific Projects, NIH (CRISP).

An inventory of aging research (other than biomedical) has recently begun. This "Comprehensive Inventory and Analysis of Past and Current Federally Supported Research in Aging," sponsored through contract by DHEW's Administration on Aging, will cover the past 10 years.

Data Banks

Data collections which have potential utility for research on the biomedical, psychosocial, and service delivery aspects of aging exist in various forms and at various sources. They may or may not be identifiable as being addressed to aging, yet an aged group might constitute a significant portion of a total population or sample under study. The data may represent one-time or continuous studies, longitudinal or cross-sectional designs, general purpose or program-oriented statistics, national, local or even narrower populations.

An extremely useful resource would be a data index to aging-related statistics from research studies and from data collection sources such as the Bureau of the Census, the National Center for Health Statistics, and the Social Security Administration.

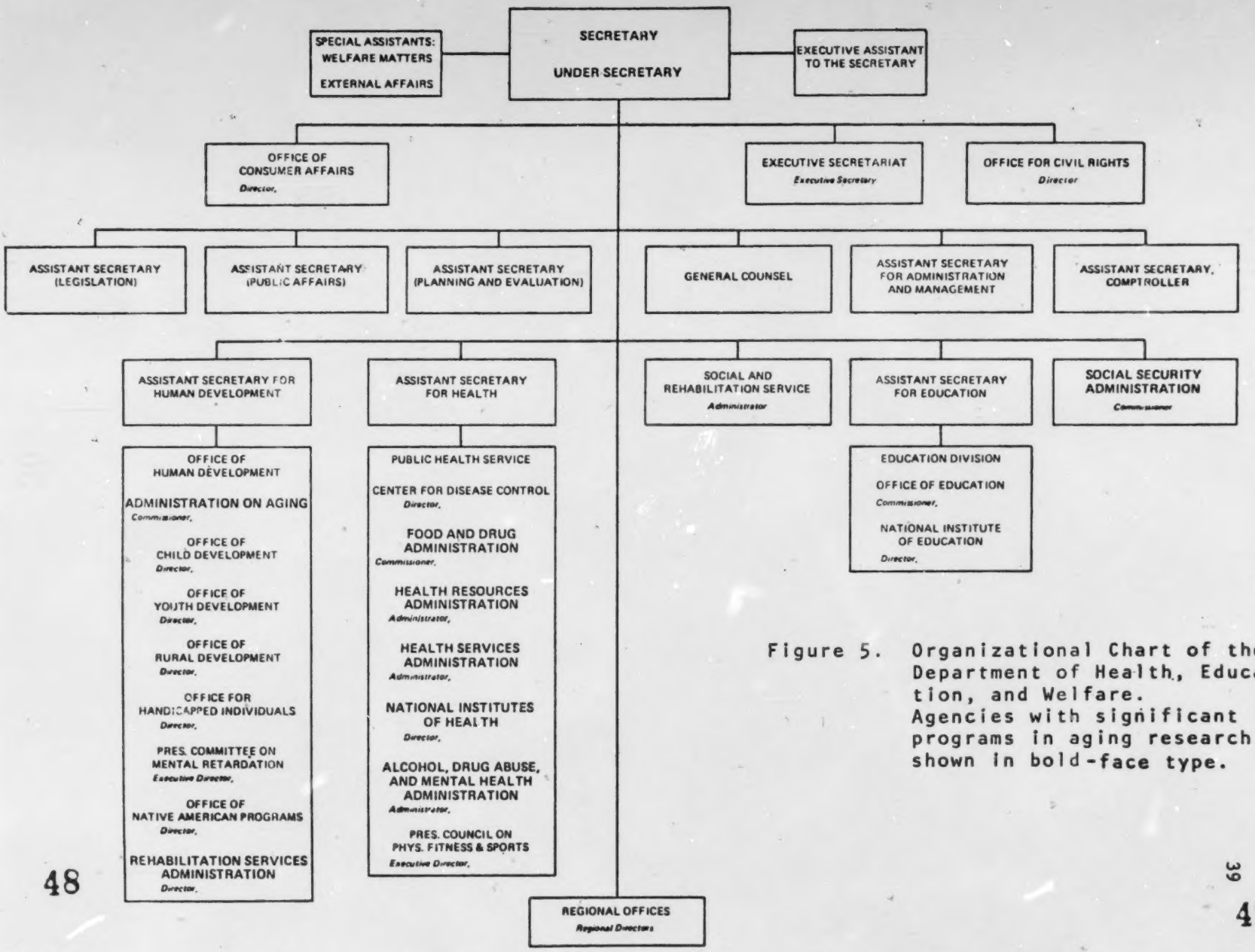

Figure 5. Organizational Chart of the Department of Health, Education, and Welfare. Agencies with significant programs in aging research shown in bold-face type.

CHAPTER V

BRIEF LEGISLATIVE HISTORY OF RESEARCH IN AGING WITHIN HEW

> "The Congress finds and declares that . . . there is no American institution that has undertaken comprehensive, systematic, and intensive studies of the biomedical and behavioral aspects of aging and the related training of necessary personnel."

The DHEW (Figure 5) has a broad array of research authority. The focus of this presentation is limited to the main legislative authority for research efforts in aging within the Department. It may omit some additional research authority which might conceivably be utilized for age-related research.

PUBLIC HEALTH SERVICE (PHS)

The National Institutes of Health (NIH)

The Public Health Service Act (Sec. 301) is the legislative source of the National Institutes of Health's basic research authority. Since the passage of the PHS Act there have been further enactments which increased the number of Institutes to the present level of 11 Institutes (Figure 6). Prior to 1962, each of the Institutes was limited to research in a disease category. In 1962, an amendment (P.L. 87-838) to the PHS Act created the National Institute of Child Health and Human Development(NICHD) to provide for research into "the process of human growth and development." The creation of NICHD allowed for research into both normal and abnormal development of the human being and expressly declared that it include such fields as child health, prenatal development, maternal health, and aging. (1) The Report of the House

1/ The Research in Aging Act of 1974, P.L. 93-296

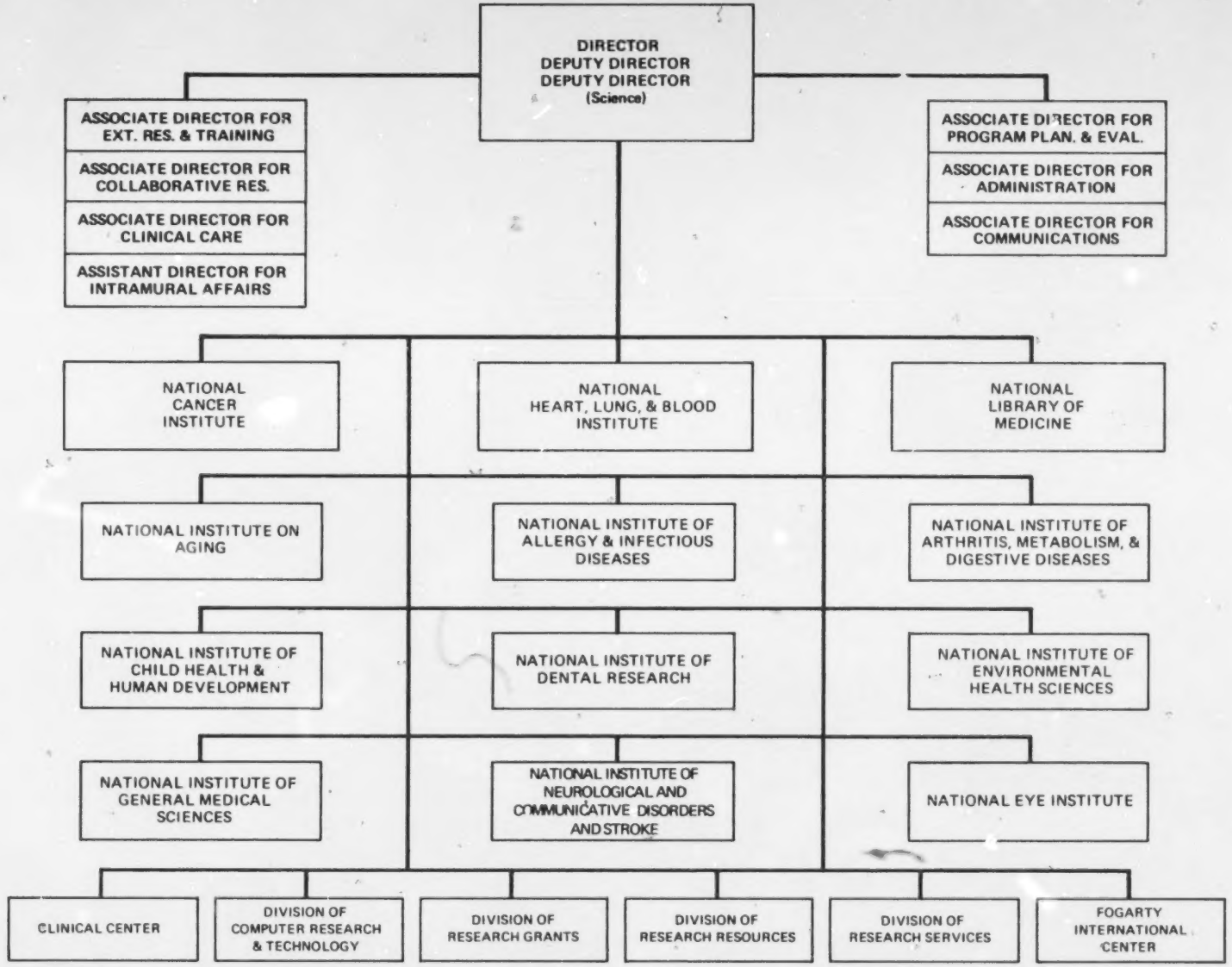
DIRECTOR
DEPUTY DIRECTOR
DEPUTY DIRECTOR
(Science)
ASSOCIATE DIRECTOR FOR EXT. RES. & TRAINING
ASSOCIATE DIRECTOR FOR COLLABORATIVE RES.
ASSOCIATE DIRECTOR FOR CLINICAL CARE
ASSISTANT DIRECTOR FOR INTRAMURAL AFFAIRS
ASSOCIATE DIRECTOR FOR PROGRAM PLAN. & EVAL.
ASSOCIATE DIRECTOR FOR ADMINISTRATION
ASSOCIATE DIRECTOR FOR COMMUNICATIONS
NATIONAL CANCER INSTITUTE
NATIONAL HEART, LUNG, & BLOOD INSTITUTE
NATIONAL LIBRARY OF MEDICINE
NATIONAL INSTITUTE ON AGING
NATIONAL INSTITUTE OF ALLERGY & INFECTIOUS DISEASES
NATIONAL INSTITUTE OF ARTHRITIS, METABOLISM, & DIGESTIVE DISEASES
NATIONAL INSTITUTE OF CHILD HEALTH & HUMAN DEVELOPMENT
NATIONAL INSTITUTE OF DENTAL RESEARCH
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES
NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES
NATIONAL INSTITUTE OF NEUROLOGICAL AND COMMUNICATIVE DISORDERS AND STROKE
NATIONAL EYE INSTITUTE
CLINICAL CENTER
DIVISION OF COMPUTER RESEARCH & TECHNOLOGY
DIVISION OF RESEARCH GRANTS
DIVISION OF RESEARCH RESOURCES
DIVISION OF RESEARCH SERVICES
FOGARTY INTERNATIONAL CENTER

Figure 6. Organizational Chart of the National Institutes of Health.

Committee states that the NICHD will be authorized to conduct research and training in "studies in the biological, medical and behavioral aspects of aging." The House Report further states that:

> The proposal to depart from the disease category approach in the establishment of the proposed new Institutes (NICHD and NIGMS) does not reflect any intent--either on the part of the Committee or the Department--to curtail or de-emphasize research activities of existing categorical Institutes . . . . Rather it is the objective of this legislation to reinforce the existing structure of categorical Institutes by providing for proper administrative coordination of research activities in two broad areas of research which--although not focused on a particular group of diseases--are essential to any broad advance in the health sciences. (2)

The Senate Report on the NICHD authorization stated that:

> The Institute's attention will be focused, not on any one disease or part of the body, but rather on the whole person, with its complex of health problems and requirements. There will be emphasis, for example, on the special health status and needs of particular segments of the population--e.g., infants, adolescents, expectant mothers, and aged persons--with common health problems which lend themselves to intensive study. [emphasis added] (3)

In 1971, the White House Conference on Aging recommended that a National Institute of Gerontology be established to support and conduct research and training in the biomedical and social-behavioral aspects of aging. Congress passed such a bill in 1972 but it was pocket-vetoed by the President. A similar bill was again introduced in 1973 and enacted into law in 1974 as the Research on Aging Act of 1974. This statute created the National Institute on Aging by adding new sections (Sec. 461-464) to the Public Health Service Act.

The statute establishing the NIA directs that the Institute conduct and support biomedical, social, and behavioral research and training related to the aging process and the diseases and other special problems and needs of the aged.

The legislative history of the Act reveals that both the House and Senate Committees felt that research into aging was important enough to grant it an independent status within the organizational structure of the National Institutes of Health. (4)

The issue of overlapping jurisdiction and duplication of effort by the new Institute was raised and addressed in the House Report, and in the Floor debate. The Committee stated that the bill provided the Secretary with authority to (1) assign responsibility for research and training to the new Institute or another Institute, or to both of them and (2) be responsible for coordinating such activities so as to avoid unproductive and unnecessary overlap and duplication. (5)

Health Resources Administration (HRA)

The Health Resources Administration operates under the authority of the Public Health Service Act, Sec. 304-306. These sections authorize the Secretary to undertake through the National Center for Health Services Research and the National Center for Health Statistics and any other units of the Department, the conduct, support and coordination of health services research, evaluation, and demonstrations, as well as health statistical activities. The same Act also authorized the Secretary to coordinate in the same context, health services research, evaluation and demonstration with the experiments and demonstrations authorized by the Social Security Act and the Social Security Amendments of 1967. (6)

The enactment of the Partnership for Health Amendments of 1967 provided a Government-wide focus for health services research. The Health Services Research, Health Statistics and Medical Libraries Act of 1974, revised and extended the programs of health services research. In addition, the Center for Health Services Research was given the responsibility for the development of an overall health services research strategy and provided for the coordination of health services research activities for the entire Department. (7)

Health Services Administration (HSA)

The primary mission of the various Bureaus within HSA is the actual delivery of services or the support through grants, contracts, and other arrangements to provide services. HSA thus tends to be a utilizer of research to improve health care delivery. The legislative mandate for HSA is found primarily in the Public Health Service Act and the Social Security Act. The research and development aspects of health services were separated with HSA having responsibility for health delivery and health service system development.

Alcohol, Drug Abuse & Mental Health Administration (ADAMHA)

ADAMHA is comprised of three Institutes--National Institute on Alcohol Abuse and Alcoholism, the National Institute on Drug Abuse, and the National Institute of Mental Health. Each Institute has research authority with implications for research in the field of aging (Figure 7).

The National Institute of Mental Health was created by Sec. 455 of the Public Health Service Act. It also functions under the Mental Retardation Facilities and Community Mental Health Centers Construction Act of 1963. NIMH carries on a broadly based research and development program. (8)

The legislative history indicated concern over the increasing age of the population and the implication for mental health research stating:

> There is evidence also, that the number of mental cases is increasing out of proportion to the population increase. While the rate for a given age group is probably no higher than in the past, the rapid increase in the average lifespan is probably responsible for this rise since the incidence of mental disease increases with age. The number of persons age 65 and over is expected to double within the next 10 years, as compared with an overall population increase of only about 23 percent. Unless positive steps are taken, we must, therefore, expect the problem of mental diseases to increase as our population grows older. (9)

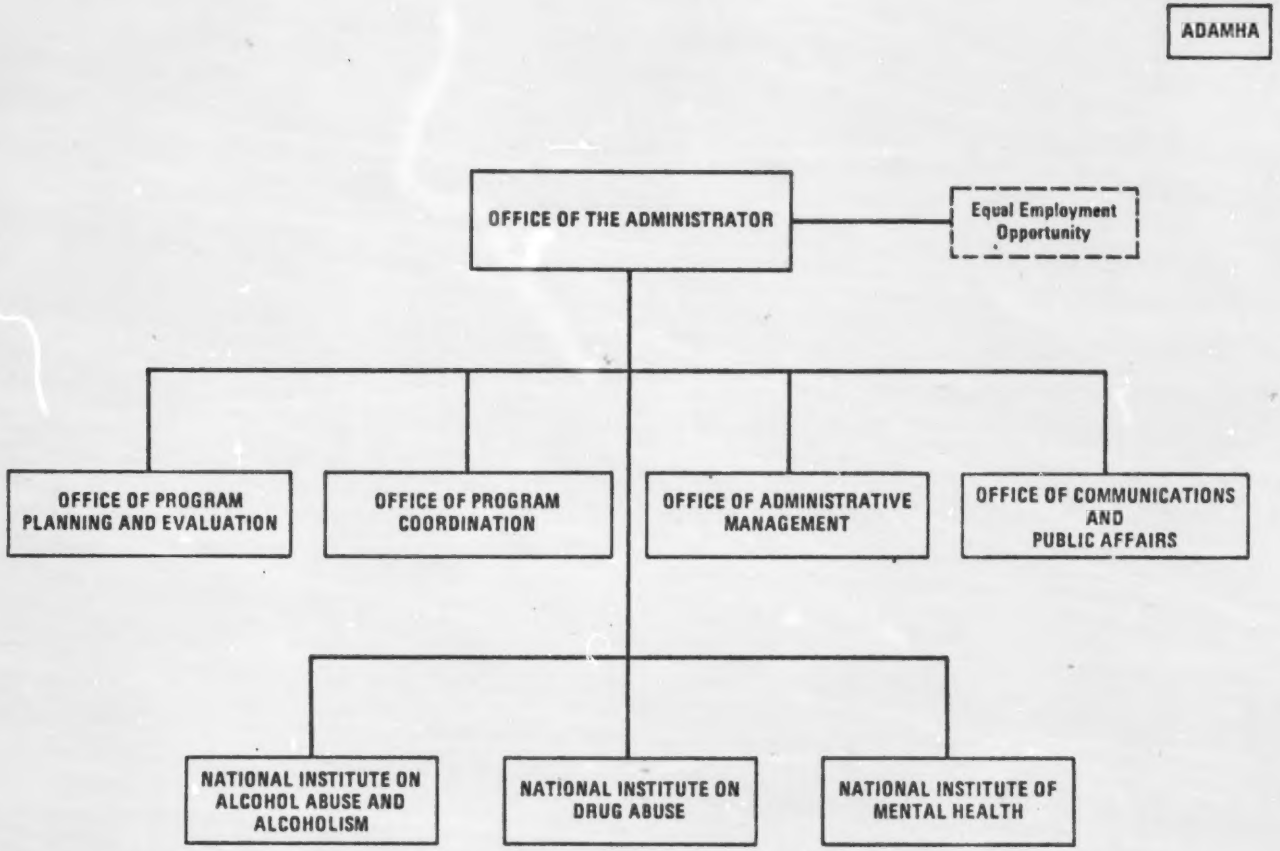
ADAMHA
OFFICE OF THE ADMINISTRATOR
Equal Employment Opportunity
OFFICE OF PROGRAM PLANNING AND EVALUATION
OFFICE OF PROGRAM COORDINATION
OFFICE OF ADMINISTRATIVE MANAGEMENT
OFFICE OF COMMUNICATIONS AND PUBLIC AFFAIRS
NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM
NATIONAL INSTITUTE ON DRUG ABUSE
NATIONAL INSTITUTE OF MENTAL HEALTH
DEC. 1975

Figure 7. Organizational Chart of the Alcohol, Drug Abuse, and Mental Health Administration. Aging research is a significant component within the National Institute of Mental Health.

In 1975, NIMH established a new Center for Studies of the Mental Health of the Aging. The Center will develop, coordinate and evaluate programs of research, training, and services related to the mental health of the aging. Another activity will be holding national conferences to provide a forum for the exchange of ideas and information in this growing area of concern.

The other two Institutes within ADAMHA--the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism--have implications for research in aging although the authorizing legislation does not specifically make reference to the aged but applies to all segments of the population.

Food & Drug Administration (FDA)

The FDA has broad research authority, none of which is specifically age-related. The mission of the FDA, as the government's primary consumer protection agency, is to protect the public from impure, ineffective, or impaired foods, drugs, biological products, poisons, pesticides, and food additivies. The FDA is also authorized to ensure that all of the products that it regulates are honestly and informatively packaged. (10) Many of the products which the FDA analyzes have a significant impact on the elderly users, particularly drugs, since the elderly are disproportionately greater users.

OFFICE OF HUMAN DEVELOPMENT (OHD)

The OHD, another major unit within the Department of HEW, is described as having responsibility to "help Americans with special needs." The two most significant agencies, in terms of the aged, under the OHD are the Administration on Aging (AoA) and the Rehabilitation Service Administration (RSA).

Administration on Aging (AoA)

The Older Americans Act of 1965, as amended provides authority for training and research and development in specific areas of concern, e.g., to study current patterns and conditions of living of older persons, to develop and demonstrate new approaches, techniques, and methods which hold promise of substantial contribution toward wholesome and meaningful living and for coordination of community services for older persons.

Impetus for the creation of the AoA resulted from the White House Conference on Aging in 1961. The original statute gave the AoA the authority to assist the Secretary in all matters pertaining to the problems of the aged and aging.

The Senate Committee was impressed with the success of the projects supported by AoA so that in 1967 the appropriations for research and demonstrations were increased. (11)

In 1973 amendments to the Act made considerable changes in the entire structure of the AoA and added significantly to its research mandate through the authorization of Multi-disciplinary Centers for Gerontology. The mandate of the Centers include:

> The conduct of basic and applied research on work, leisure, and education of older people, living arrangements of older people, social services of older people, the economics of aging, and other related areas. (12)

In addition, these centers are charged with the responsibility of stimulating "the incorporation of information on aging into the teaching of biological, behavioral, and social sciences at colleges or universities" and "also, to create opportunities for innovative, multidisciplinary efforts in teaching, research and demonstration projects with respect to aging." (13) The multidisciplinary centers were created in response to the results of a study on the need for trained personnel in the field of aging, mandated by the 1967 Amendments to the Older Americans Act.

This study notes that a major hindrance to the development of such centers has been the lack of general purpose financial support from the Federal Government, which limits its aid to funding specific research and training projects. (14)

A new and expanded evaluative function was also added to the Act which granted the AoA the authority to:

> carry on a continuing evaluation of the programs and activities related to the purpose of this Act, with particular attention to impact of Medicare and Medicaid, the Age Discrimination Act of 1967, and the programs of the National Housing Act

relating to housing for the elderly and setting standards for the licensing of nursing homes, intermediate care homes, and other facilities providing care for older people. (15)

The 1975 amendments to the Act extend gerontological training and research authority for an additional two years and also authorizes a new research area, namely, the legal problems affecting older persons.

Rehabilitation Services Administration (RSA)

The Rehabilitation Act of 1973 consolidates all research and training authority of predecessor legislation. This Act provides authority to develop new applications of the most advanced medical and rehabilitation technology and services to help handicapped persons through research, special projects and demonstrations. (16)

The Act consolidates four areas of special emphasis into a single special project authority (Title III), including projects for older blind individuals.

SOCIAL SECURITY ADMINISTRATION (SSA)

The Social Security Act of 1935 granted the Secretary the authority to study and make recommendations as to the most effective methods of providing economic security through social insurance.

In 1956, provision was made for cooperative research and demonstration projects (P.L. 84-880, Sec. 1110) that would lead to the prevention and reduction of dependency. One change of significance was made in Sec. 1110 (P.L. 90-248) by granting specific authorization for research to the Social Security Administration separate and distinct from that of the Social and Rehabilitation Service. (17)

With the advent of Medicare and its administration by the Social Security Administration came additional research authority in the form of Section 1875. This section provides authority to make studies and develop recommendations to be submitted to Congress related to the health care of the aging, including studies and recommendations concerning

the adequacy of existing personnel and facilities for health care for the purposes of programs under Title XVIII; methods for encouraging economical alternatives to in-patient hospital care; and the effects of the deductibles and co-insurance provisions upon beneficiaries, providers of services, and the financing of the program. (18)

With the enactment in 1972 of P.L. 92-603, Sec. 222 provision was made for demonstration projects designed to determine the relative advantages and disadvantages of various alternative methods of making payments on a prospective basis to hospitals, skilled nursing facilities, and other providers of services for care provided by them under Title XVIII of the Social Security Act as well as Title XIX and V of the Act. Also included, were demonstrations of homemaker, day care, and extended care projects. These projects have great potential for the health care of the aged. (19)

OFFICE OF EDUCATION

The inclusion of research authority of specific concern to aging within the education programs administered by the Department is a relatively new development. In 1973, Public Law 93-29, the Comprehensive Older Americans Act Amendments, added a new Section 110 to Title I of the Higher Education Act of 1965. (20) The House and Senate Reports are almost identical in their language calling for grants to institutions of higher education to plan, develop, and carry out programs specifically designed to apply the resources of higher education to the problems of the elderly.

Public Law 93-29 also included an amendment to the Adult Education Act which added a new Section 310 authorizing special projects for the elderly and programs for those elderly persons whose ability to speak and read the English language is limited and who live in areas with a culture different from their own. (21)

The Vocational Educational Act of 1963 as amended provides for research in specified areas, i.e., consumer and homemaking programs, etc. (22)

The National Institute of Education and the Fund for the Improvement of Post Secondary Education, created by P.L. 92-138, provides for educational research and development. Although no specific reference is made to the aged, its mandate provides for individuals of all ages and circumstances. (23)

ADVISORY BODIES AND COORDINATION

The two main advisory groups in aging are the Federal Council on Aging (FCA) created in 1973 and the National Advisory Council on Aging (NACA) created in 1974. The role of the FCA is to advise the President, Secretary, Commissioner on Aging, and Congress. The FCA also has been authorized to undertake studies which promote the interests of the aged with several areas specified, i.e., the interrelationship of benefit programs for the elderly, the impact of all taxes on the elderly, and the effects of formula grants. While the FCA may conduct studies, it is not an operational agency which supports research. (24) Its primary focus is oversight or advocacy on behalf of the aged.

The NACA's role is to advise, consult with and make recommendations to the Secretary on programs relating to the aged. The legislation also requires the Secretary in consultation with the National Institute on Aging and the NACA and such other appropriate advisory bodies to develop a plan for a research program on aging designed to coordinate and promote research into the biological, medical, psychological, social, educational, and economic aspects of aging. (25) This (one time) plan for a research program on aging is to be transmitted to Congress and to the President.

The legislation also provides for ex officio members on the NACA. Administratively, this has provided for representations from the FCA and other agencies both within DHEW and other Federal agencies. The various pieces of legislation cited in this report direct the Secretary to coordinate the Federal programs within the Department. Coordination is primarily achieved through providing ex officio (Federal) representatives on the NACA, and through the Interagency Committees authorized under the Older Americans Act, as amended.

SUMMARY

The foregoing discussion has attempted to highlight the more significant items of legislation and agencies that have age-specific and age-related authority for research. While there is a possibility for overlap and/or duplication, this is minimized because the focus of the research authority varies sufficiently; the field is broad and multidisciplinary in nature; and the resources for research in aging have been limited.

References

(1) H.R. Rep. No. 1969, 87th Cong., 2d Sess. 1-2 (1962).

(2) Id. at 3.

(3) S. Rep. No. 2174, 87th Cong., 2d Sess. 3 (1962).

(4) H.R. Rep. No. 93-906, 93rd Cong., 2d Sess. 3 (1974).

(5) S. Rep. No. 93-299, 93rd Cong., 1st Sess. 4 (1973).

(6) Public Health Service Act §§ 304-306, 42 U.S.C. §§ 242b-d (1974).

(7) H.R. Rep. No. 538, 90th Cong., 1st Sess. 17 (1967).

(8) Public Health Service Act § 455, 42 U.S.C. § 289k-1 (1968).

(9) S. Rep. No. 1353, 79th Cong., 2d Sess. 3 (1946).

(10) Directory of Federal Technology Transfer, supra note 27, at 92.

(11) S. Rep. No. 367, 90th Cong., 1st Sess. 3 (1967).

(12) Older Americans Act § 421(1)(B), 42 U.S.C. § 3031 (1974).

(13) Id.

(14) H.R. Rep. No. 93-43, 93rd Cong. 1st Sess. 20 (1973).

(15) Older Americans Act § 202(14), 42 U.S.C. § 3012 (1965).

(16) Op. Cit. at 105.

(17) Social Security Act § 1110, 42 U.S.C. § 1310 (1956).

(18) Social Security Act § 1875(a), 42 U.S.C. § 1395(11) (1965).

(19) Social Security Act Amendments of 1972 § 222, 42 U.S.C. § 1395 (1972).

(20) Higher Education Act of 1965 § 110 as amended by Public Law 93-29, 20 U.S.C. § 1008a(b) (1974).

(21) Adult Education Act § 306(a)(4), 20 U.S.C. § 1205 (1974).

(22) Vocational Education Act § 161(d)(2), 20 U.S.C. § 1341(d) (1974).

(23) Public Law 92-318 §§ 404-405, 86 Stat. 235 (1972).

(24) Older Americans Act § 205, 42 U.S.C. § 3012 (1974).

(25) Public Health Service Act §§ 461-464, 42 U.S.C. §§ 289k-1-5 (1974).

Chapter VI

RESEARCH COORDINATION AND RESOURCE NEEDS

> "The Secretary shall, through the Institute, conduct scientific studies to measure the impact on the biological, medical, and psychological aspects of aging of all programs and activities assisted or conducted by the Department of Health, Education, and Welfare." 1/

The discussion of research priorities in the third chapter of this Research Plan illustrates that the phrase "Research on Aging" is an encyclopedic one. It encompasses the most fundamental investigations of the structure and physiology of cells; the difficult, at times expensive, and often lengthy studies of human populations; and the search for ways to reinforce the ability and willingness of many of the elderly to care for themselves, to live independent and satisfying lives.

To begin to address the many meanings implicit in "Research on Aging" requires an incredibly diverse range of training, experimental resources, research tactics, and knowledge.

COORDINATION

The wide ranging nature of research on aging has been recognized by the Congress by its creation of various agencies, within and without DHEW, that address some aspects of aging and the problems of the aged. The brief legislative history given in the previous chapter made clear that while there are many agencies within DHEW involved in aging research, each agency has a distinct, clearly identifiable function; for example:

> The National Institute on Aging conducts and supports biomedical, social, and behavioral research and training related to the aging process and the diseases and other special problems of the aged

1/ The Research on Aging Act of 1974, P.L. 93-296

The Health Resources Administration is concerned with research in the delivery of health services for the aged, with particular emphasis placed on long-term care, cost-effective and consumer-acceptable alternatives to institutional care, and cost-effectiveness and quality of all health and health-related services

The Health Services Administration is concerned principally with the delivery and provision of services, and, as such, is a client of research, particularly of studies on the improvement of health-care delivery

The Rehabilitation Services Administration is primarily concerned with the problems of the handicapped. As such it addresses many of the problems of the aged, particularly through its efforts to foster the development of the most advanced medical and rehabilitative technology and services to help handicapped persons

These examples are intended to illustrate that while there are many agencies within DHEW directly or indirectly concerned with the aged, they do have unique functions that may overlap but are not duplicative. Rather, properly carried out and coordinated, the work of the various agencies can serve to synergistically raise the level of the research effort on aging.

Given such considerations, it is recommended that each agency within DHEW concerned with aging as part of its mission continue to set its own agenda and priorities, determine its own staffing needs, and, where appropriate, formulate, within Congressional and departmental guidelines, its own research emphasis as expressed in grants, contracts, and other support mechanisms as well as in its efforts to raise the level and quality of trained research manpower.

However, given the overlapping and often potentially reinforcing efforts of many agencies, it is also recommended that the existing coordinative mechanisms be strengthened, and that in particular there be continuing reliance on the advisory capabilities of the Federal Council on Aging and the National Advisory Council on Aging. In addition, it is recommended that the coordinative efforts of the Interagency committees authorized by the amended Older Americans Act be continued and expanded.

NEEDS

In Fiscal Year 1975, the latest for which actual data are available, an estimated $25 to $30 million was spent by DHEW on research directly addressed to various aspects of aging and the problems of the aged--in all, about 1 percent of the total DHEW research budget. This data is based primarily on information furnished by the agencies participating in research on aging as defined above. That amount is too small by any measure, not least the fact that this small and quite limited funding is intended to probe issues and concerns that confront some 10 percent of our population.

Capitalization needs to achieve a base for quality research on aging include four basic areas: defining and developing the human and animal populations to be studied; developing the manpower necessary for research; acquisition of technical resources and equipment; development of a data base for determining factual knowledge about the aging process that currently exists; and, of course, establishment of basic priorities.

It is essential, in the view of the National Advisory Council on Aging that, given both the opportunities for rapid advance in knowledge in the field of aging research and the historical undernourishment of the field, there be a significant national investment in research directly on aging (here defined as funds spent directly for research on aging and the aged by various DHEW agencies). The National Advisory Council on Aging, in its role as advisor to the Secretary, DHEW, recommends an average increase in funding of approximately $10 to $12 million per year, beginning in Fiscal Year 1977 and culminating in an annual funding of $75 to $90 million by Fiscal Year 1981.

Approximately 190 manyears were devoted to DHEW activities in research directly on aging in Fiscal Year 1975. Of this number, approximately 85 percent was within the National Institutes of Health, with the other 15 percent allocated in other agencies within DHEW. In the future there must be a growth in staff commensurate with the increase in funding in order to utilize these increases prudently and efficiently.

The number of agencies within DHEW participating in aging research makes it impossible to break down the above figures for funding or staffing. The individual agencies within the

Department, through the processes of budget, forward planning, and the Department's manpower management system, will present specific plans and justification for funds and staffing needs relevant to the goals of this DHEW Research Plan.

Following this five-year period dedicated to establishing aging research and achieving the short-term goals of this Research Plan, a reassessment of the status of aging research will be necessary to determine whether this capitalization is sufficient to support the major long-term thrust that will be needed in future years.

Such recommendations may seem demanding. Certainly they should and will compete within the overall priorities of DHEW and of the Federal Government. However, these recommendations are intended to reemphasize and to overcome the historical underfunding of aging research; they are intended to provide adequate capitalization and to remedy, by accelerated and significant increases in the budget, our serious neglect of the need to understand the aging process and the needs of the aged.

SUMMARY STATEMENT OF SELECTED RESEARCH OPPORTUNITIES

We now have an opportunity to extend our knowledge and to design effective programs to deal with many of the issues that concern aging and the aged. In some cases, we can move ahead fairly rapidly, with applicable returns on our research investment possible within five years; for other issues, their very complexity mandates a longer, more sustained effort, although significant improvement in our understanding is possible within several years.

Some of these issues are listed below, both those amenable to a short term effort of about five years and those requiring a long-term investment:

BIOMEDICAL ISSUES

Short-Term

- o the decline in immunological competence with aging, and its implications
- o variations in the process of aging and the patterns of disease among the aged of different ethnic, racial, and cultural groups and between the sexes
- o the interaction of aging and its accompanying diseases with such external factors as nutrition, physical fitness, and response to medicines.
- o collaborative studies with other Institutes of the NIH and with other DHEW agencies of diseases more common to the aged--e.g., diabetes mellitus, senile dementia (or mental deterioration), atherosclerosis, and osteoporosis
- o effective diagnosis and management of the reversible forms of senility

Long-Term

- o The criteria for healthy and successful aging
- o the mutually interacting influences of aging and disease

- o influence of cultural background on successful aging
- o personal and economic costs of major diseases in old age
- o prosthetic technology as an aid to the maintenance of an independent life

BEHAVIORAL AND SOCIAL ISSUES

Short-Term

- o the social costs, system costs, and socioeconomic impact of an increased population of the elderly on communities, public and private services, and the elderly
- o flexible retirement policies, their advantages and disadvantages to the society at large and to the aged
- o occupational and social roles for older people
- o adjustments to crises of the life cycle
- o support of income maintenance programs

Long-Term

- o relationships among family structure and support, life styles, and patterns of aging
- o middle age as a transition to old age
- o personality changes during life, from young adult to very old age
- o improvement and maintenance of memory
- o the year 2000: the meaning and impact of the new age structure on American society

ISSUES IN HUMAN SERVICES AND DELIVERY

Short-Term

- o integrated services for the elderly

- ready access by the elderly to prosthetic aids
- structural and fiscal basis for improvements in Medicare
- self care and its relationship to preventive medicine
- living arrangements for the elderly

Long-Term

- the family as a health and social service delivery system
- research base for care of the aged under a National Health Insurance System
- educational opportunities for the aged
- the environment for long-term care
- costs of health care in old age

RESEARCH RESOURCES

Short-Term

- expanded training in geriatrics and gerontology
- availability of animal and human populations for aging studies

Long-Term

- information systems and research evaluation
- university based and regional centers for research on aging and the problems of the aged

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